

professional. Professionals and academics are usually restricted to projects controlled by more or less rigid time schedules. However the pendulum is likely to swing.

The history of Australian ornithology to 1850, and a full bibliographic record to 1950, has been lucidly written by Major H. M. Whittell in his *The Literature of Australian Birds* (Perth, 1954). A series of papers by myself outlining aspects of the development of Australian ornithology, have appeared in the *Emu*: 37 (1937): 14-18; 72 (1972): 41-50; 73 (1973): 206-209, and in the *Journal of the Royal Society of Western Australia*, 62 (1979): 33-43. Stephen Marchant, editor of the *Emu*, has published a critical history of that journal and an appraisal of its contributors and their contributions in the *Emu*: 72, (1972): 51-69.

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New Zealand Ornithology during the past 50 years

by John A. Gibb

New Zealand's unique geological history still shows in our avifauna and hence in New Zealand ornithology. Though separated from the rest of Gondwanaland some 200 million years ago, these islands possess archaic survivors from the distant past - by virtue of long and remote isolation. These may be seen in our forests, likened to those of the Mesozoic and visited by northern biologists as on a pilgrimage (Fleming 1977): in the tuatara (*Sphenodon*), native frogs (*Leiopelma*), and birds, e.g. the kiwis (*Apteryx* spp.), and in one of the two native bats (*Mystacina*), sole member of an endemic family. The New Zealand region spans the Southern Ocean from the Kermadecs at 29.5°S to Macquarie I. at 55°S; it displays penguins with parrots, and over 50 species of the Procellariidae, with fewer than half this number of native passerines. Thus we are concerned for the survival of a small number of land birds, many of them endemic, and a great array of sea birds, through times of drastic environmental change.

The isolation that excluded other mammals from New Zealand also excluded man until Polynesians arrived only about 1000 years ago. The Maori burned some forest from drier parts of the country, ate some birds, and contributed to the demise of the moas before the first whalers sailed New Zealand waters in the late 18th century. In less than 200 years of European occupation New Zealand has lost 11½ million hectares of forest and in the process, 5 species and 5 subspecies of birds have become extinct (Williams 1962). During the past 50 years the extinction of the Laughing Owl *Sceloglaux albifacies*, Huia *Heteralocha acutirostris* and probably of the New Zealand Thrush *Turnagra capensis* has been confirmed beyond reasonable doubt. Many others have either remained very rare or have become much rarer: *Apteryx oweni*, *Anas aucklandica*, *Notornis mantelli*, *Himantopus novaeseelandiae*, *Strigops habroptilus*, *Cyanoramphus malherbi*, *Xenicus longipes*, *Petroica traversi*, *Philesturnus carunculatus*, *Callaeas cinerea* and *Notiomystis cincta*.

The wholesale clearance of lowland forest has been the most serious cause of these reductions. Introduced ungulates and the Australian marsupial *Trichosurus vulpecula* have also thinned the remaining forest and reduced its crops of fruit; while feral cats, mustelids and rodents have all been powerful predators on native birds lacking natural defences against them.

A few small off-shore and outlying islands remain precariously inviolate, the last refuge of some vulnerable species. Biologists are fighting a rear-guard action to keep these islands free of the offending mammals, and even to remove such predators from others already infested. The riddance of cats from Cuvier I., for example, has enabled the Wildlife Service to re-establish saddlebacks (*Philesturnus*) there. The brave transfer of the world population (5♂♂, 2♀♀) of Black Robins *Petroica traversi* from Little Mangere to nearby Mangere I. in the Chathams, both free of mammals, was justified by the shrinking patch of coastal forest where the survivors were cornered.

Faced with continuing demands for the little remaining lowland forest on the mainland, conservationists confront sawmillers with requests to set up a network of reserves. Some of the principles of island biogeography, lately extended to continental 'island' habitats, are being applied to the design of these biological reserves (Diamond 1975), but not even a generous spread of reserves can stop all further extinctions, as the existing avifauna is still adjusting to the present restricted distribution of suitable habitats.

Petrels and shearwaters used to breed on mountain ranges far inland, but most no longer do so – presumably because of predation by mustelids, cats and rats. Their plight is less desperate than that of the land birds because they also breed on islands and their food supply is not yet endangered – so far we have not experienced severe oil spills in New Zealand waters.

The past 50 years have seen a steady accumulation of knowledge about New Zealand sea birds. Richdale's (1957) study of *Megadyptes antipodes* remains a classic. Current studies of *Diomedea epomophora* at Taiaroa Head, near Dunedin, and on subantarctic Campbell I., and of *Sula bassana* at Cape Kidnappers in the North Island, are revealing the demography of these long-lived birds. Other breeding studies, together with systematic surveys of the islands and well-organised beach patrols for stranded corpses (a New Zealand specialty), are rewarding. Highlights include the finding of the breeding place of *Puffinus buttoni* 1000 m above sea level in the Seaward Kaikoura Range in 1965, and the recent discovery of *Pterodroma magentae*, probably breeding in the Chathams. Following Dr Orbell's rediscovery of *Notornis* in 1948, such events have enlivened the otherwise rather sombre ornithological scene.

Colonisation of New Zealand, principally from Australia, has accelerated in historical times. The present phase began with the take-over by *Zosterops lateralis* in the mid 19th century: they now occupy all but the bleakest of habitats and could claim to be our commonest species. The following 10 species have become established breeders in the last 50 years: *Platalea leucorodia*, since about 1950, though it has not bred for the last 2 years; *Ardea novaehollandiae* since about 1940, now common; *Fulica atra*, first confirmed in 1958, now widespread but local; *Lobibyx novaehollandiae*, breeding since 1947 and still spreading; *Charadrius melanops*, since 1954 and still spreading; *Cacatua galerita*, probably an escape, now established locally; *Platyercus eximius*, an escape firmly established in several districts; *Dacelo gigas*, introduced Kawau I., off Auckland, 1860–80, now also on the adjacent mainland; *Pycnonotus cafer*, an escape now exterminated; *Hirundo tabitica*, first bred in 1958, now widespread and common. During this same period, wader enthusiasts have added nearly 20 new Arctic species to the New Zealand list.

Some 34 species were deliberately introduced and spread by man. Though none has won such popular affection as the darling natives, the countryside

would seem empty without them; on the other hand, farmers would be deprived of several species commonly regarded as pests (e.g. House Sparrow, Starling, Indian Myna, Rook). The only recent introduction, of *Perdix perdix* in the early 1960s, seems to have failed.

The second (1955) edition of Oliver's *New Zealand Birds* stood for 11 years before Falla, Sibson & Turbott wrote the first field guide in the Peterson tradition. The same authors have now produced a much improved 'New Guide' (1979), which appeared, sadly, just after Sir Robert Falla's death. Kinsky's (1970) 'Annotated Checklist' is also being revised. These volumes, with Turbott's (1967) *Buller's Birds of New Zealand*, form the nucleus of every New Zealand ornithologist's library.

The Royal Forest and Bird Protection Society boasts much the largest membership among our natural history societies, and is politically active in the cause of conservation. The Ornithological Society of New Zealand organises regional as well as national meetings, publishes *Notornis* quarterly, runs the nest record scheme, and promotes various enquiries; it steers clear of politics. The Society initiated the bird-banding scheme now run by the Wildlife Service. A highly ambitious achievement has been the production of a provisional atlas of bird distribution (Bull *et al.* 1978), which did well to cover 85% of the 3675 10,000-yard map squares comprising New Zealand. A definitive atlas with even better coverage may be produced in about 1980.

Fifty years ago almost all ornithological publications came either from the museums or from amateurs. New Zealand has shared the strong post-war swing towards professionalism that has grown up alongside amateur ornithology. Ornithologists now find employment (if they are lucky) in the Wildlife Service, the museums, DSIR Ecology Division, or in the universities.

Notable research has been done on the moas and other extinct and flightless birds (e.g. Archey 1941, Oliver 1949); on the age and origins of the biota (Fleming 1975); on the distribution and status of native land birds and their adaptation to a changing environment, and on the biology of sea birds here and in Antarctica, by numerous New Zealand ornithologists. Modern single-species studies, research on the development of dialects in *Philesturnus* (P. Jenkins unpubl.), and on the species diversity of island habitats, reinforce the prospect that New Zealanders will keep up with the frontiers of ornithology. There will be more extinctions and more additions to the avifauna. Study of their evolutionary implications may be as important a contribution to knowledge in the next 50 years as it has been in the past.

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Recent trends in sub-Antarctic ornithology

by John Warham

In this review the sub-Antarctic is considered to be the region of the Southern Ocean between the sub-Tropical and Antarctic Convergences (Figure 1). Various island groups within this zone provide important breeding sites for large numbers of seabirds. Smaller numbers of landbirds are also resident, some of endemic status.



Fig. 1. The Southern Ocean showing mean positions of Sub-Tropical and Antarctic Convergences.